The Effectiveness of Using Computerized Educational Games on Developing Aspects of English Grammar for Sixth Graders in Gaza Governorates

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Study Background

Language is one of the most important things that we can give to our children. Almost all human beings acquire a language and sometimes more than one, to the level of native competency, before the age of five. The human brain is wired for language. It does not matter whether the language is spoken, signed, or otherwise.

Teachers often ask about the effective method in teaching grammar. Traditionally, many teachers teach grammar seriously, make the lesson dull and uninteresting. Students are not motivated to learn when teachers resort to traditional methods of teaching.

To enhance the students acquisition of English grammatical rules and to increase the students' motivation for learning English grammatical rules, the researcher attempts to examine the effectiveness of using computerized games to develop aspects of English grammar.

Statement of the Problem

The main intent of the current study was to examine the effectiveness of using computerized educational games on developing aspects of English grammar for the sixth graders in Gaza Governorates.

Study Questions

The problem can be stated in the following major question:
What is the effectiveness of using computerized educational games on developing aspects of English grammar for the sixth graders in Gaza governorates?

From the above major question, the following sub-questions were derived:

1. What are the suitable computerized educational games for developing aspects of English grammar for the sixth graders?
2. Are there statistically significant differences at ($\alpha \leq 0.05$) between the sixth graders mean scores of the experimental group in the pre and post grammar test due to the use of computerized educational games?
3. Are there statistically significant differences at ($\alpha \leq 0.05$) between the sixth graders mean scores of experimental group in the pre and post grammar test due to gender factor?

Study Hypotheses

Based on the questions, the researcher hypothesized the following:

1. There are no statistically significant differences at ($\alpha \leq 0.05$) between the sixth graders mean scores of the experimental group in the pre and post grammar test due to the use of computerized educational games.
2. There are no statistically significant differences at ($\alpha \leq 0.05$) between the sixth graders mean scores of the experimental group in the pre and post grammar test due to gender factor.

Purpose of the Study

The study aimed at achieving the following objectives:

1. Designing computerized educational games to develop aspects of English grammar for the sixth graders.

2. Examining the effectiveness of the computerized educational games on developing aspects of English grammar for the sixth graders after revising the result of the post test.
3. Measuring the changing degree of the sixth graders on developing aspects of English grammar as a result of using computerized games.

Significance of the Study
This study benefits:
1. **The sixth Students:** The study magnetizes the 6th students to join a new way in learning, their readiness and motivation will be increased through using computerized games.

2. **The Teachers of English:** This study contributes helping teachers for organizing an effective teaching and learning environment in the light of using computerized games.

3. **The Curricula Designers:** The study benefits curricula designers and English language educators to design curriculum depending on employing technology in teaching.

4. **The Designers of Computerized Educational Games:** this study introduces the basic principles which should be available in the software of the computerized educational games of the students.

Definition of Terms
1.   Effectiveness
It is the degree of the enhancement in using aspects of English grammar (present and past simple tense) for the 6th graders as a result of using computerized educational games in the classroom.

2.   Computerized Educational Game
They are digitally designed games with visual illustrations based on competition and reinforcement, combine between entertainment and learning which are designed to help the 6th graders develop aspects of English grammar.

3.   Aspects of English Grammar
A set of present and past simple tense rules that governs the composition of sentences, phrases and words in English language which are taught to help the students to use English language correctly.

Part One
Theoretical Framework

Computerized Games
    Definitions of Computerized Games
- **Electronic Game:** is an activity uses using either a computer or other electronic interface that has rules, goals, and feedback (Young, 2009:32).

- **Computerized Educational Games:** are teaching aids based on multimedia, which combine between entertainment and learning. They designed according to certain procedures and rules to achieve the learning objectives (El-Harbi, 2009:116).

- **Computerized Educational Games:** are instructional activities that provide motivation, entertainment, competition and reinforcement while presenting a superficial or simulated reality (Li, 2007:12).

Furthermore, the researcher sees that computerized educational games are digitally designed games with visual illustrations based on competition and reinforcement, combine between entertainment and learning which are designed to help the 6th graders develop aspects of English grammar.

    Elements of Computerized Educational Games
Prensky (2001:22) and Ang & Zaphiris (2008:80) ensure that computer games consist of six keys as structural elements which, when combine together, strongly engage the students which are:
- **Rules:** impose limits and they force students to take specific paths to reach goals and ensure that all the students take the same paths.
- **Goals / Objectives:** goals or objectives create duty sense.
- **Outcomes and Feedback:** are how to measure students' progress against the goals. Feedback comes when something in the game changes in response to

what students do. The different potential outcomes of the game are assigned different values.

- **Conflict, Competition, Challenge and Opposition:** are the problems in a game students are trying to solve.
- **Interaction:** has two important aspects. The first is the interaction of the player and the computer. The second is social aspect of games that students do with others.
- **Representation:** means that the game is about something.

Types of Computerized Educational Games

There are nine common types of computerized games which are categorized as the following:

Exercise Games: They are intended to be used in repeating the previously learned skills and knowledge in an interesting environment of game with an educational purpose and thus increase in persistence (Alessi & Trollip, 2001:54).

Strategy Games: require higher-order thinking skills and problem solving skills for successful completion. They require users to perceive the larger problem and to plan strategies to solve it (Jones, 1998:4).

Simulation Games: require active participation and this affords opportunities for the learning material to be integrated into cognitive structures, there by aiding long-term retention (John & McFarlane, 2002:4).

Adventure Games: In these games there are very complex environments like micro worlds, with no deterministic problem representation (Bakar, 2007:69). The player solves some of the logic puzzles (with no time constraints) in order to progress through some described virtual world (Koster, 2005:12).

Role-Playing Games: where the players assume characteristics of persons or animals and behave as what they expect from these characteristics to do in some situations, during the game (Can, 2003).

Deductive Games: are specific games based on the deductive method which moving from the rule to the examples, basic

functions of the child's psyche and the need of playing. The utilization of the game is one of methods to make students more interested in English (Ratusinski, 2009:33).

Inductive Games: based on the inductive method which moving from the examples to the rule. In this method, students start from the point they want to prove, from the question which was put in the task. Answering the questions, formulate next questions, easier and easier, answers of which would lead them to the solution of the task (Ersoz, 2000:52).

Characteristics of Computerized Educational Games

In fact, not all the computer games appropriate the learning objectives so we as teachers should wonder why some computer games are effective learning means while some are not and what makes a successful learning game. Dempsey, et al. (1997:76) listing the following characteristics:

- Clear instructions and objectives should be available for the students.
- The game should be challenging which leads to the real learning.
- The students should have control over gaming options such as speed, difficulty, timing, and feedback.
- Aesthetics like screen design, graphics, animation and sound should be of appropriate quality.

Klopfer, et al., (2009:65) consider that one of the main characteristics of computer games is a freedom. So they explain the types of freedom as the following:

- **Freedom to Fail:** one does not actually fail at play, but one is free to do things at play that would look like failure in other contexts.

- **Freedom to Experiment:** this correlates closely with the freedom to fail, but suggests that within the play space the student has some room to invent new approaches to whatever task is at hand. Experimentation would be meaningless without the ability to fail.

- **Freedom to Fashion Identities:** at play, the student is not examining the nature of the physical and social worlds, but is also exploring those worlds.
- **Freedom of Interpretation:** one cannot learn from games without engaging in playing. The individual, social, and cultural motivations of a student affect what is experienced through play.

Advantages of Using Computerized Educational Games

The following are the advantages of using these technique in learning:

Challenge: A good digital game moves at a rate that keeps the students at the edge of their capabilities, moving to challenges as mastery is acquired. (Quinn, 1997:3) ensures that broad experiences and practice opportunities continue to challenge the learner.

Motivation: Computerized games offer motivational challenges create competitive environments and affective experiences of fun in which learners can engage .There are two types of motivation which intrinsic motivation pushes students to do the task freely, and extrinsic motivation which pulls students to act due to factors that are external to the activity itself, like reward or threat (Dempsey, et al., 1997:76).

Competition: Competition is against oneself, opponents, chance or time. Which associates with electronic games and plays a crucial role as for the nature of games requires. Learners are excited by competition because the question of who will win or lose remains unanswered until the game is over (Gee, 2003:90).

Engagement: Students can spend hours playing a game and not be aware of the time they have spent. (ibid, 2003:76) points out the reasons to why computer games engage learners as the following:
- Computer games represent fantasies and follow a simple principle of winning or losing, with instant outcomes,

- They recognize features to engage the learners' attention by stimulating the learners enjoyment with visual feedback,
- They provide interactive playing environment and an experience,
- Furthermore, they open up different solutions of solving problems.

Interesting Learning Environment: Using computerized games in learning environment is predicted to be one of the ways to give students an authentic learning environment and this condition helps students to learn language better than the daily classroom context.

Scaffolding / Contextual Bridging: Digital games can close the gap between what is learned and its use. Neimeyer (2006:87) ensures that using computerized games are used to train the students' brains to tune out distractions, pay attention to what was useful information and let students obtain the knowledge then connect it in their own way with what they already have learned.

Feedback / Reinforcement: Computer games continually monitor progress so reinforcement or feedback should be clear, immediate and appears after the attempt of solving problems. Lewis & Hill (1995:89) confirm that electronic games show immediate feedback which helps students know when they get an answer right or wrong.

Infinite Patience

The teacher's impatience may intimidate a learner or influence how the learner perceives himself or herself. However, machines such as computers and its games do not lose patience, and offer learners innumerable opportunities to "Just try and try it again"(Norman, 1993:67).

Student - Focused Activities

Student-focused activities require active involvement of learners. They can be considered the best way for students to be responsible for their learning. According to the opinion of

Norman (1993)   that learners and teachers change their roles and relations through games and learners are encouraged to take active role in their learning process.

Procedures for Using Computerized Educational Games

The teacher is the one who decides which game would be appropriate for students in a class. (Prensky, 2001) point out the following procedures:

- **About the Game Itself:** it is necessary to know the main aim of having a game to analyze perfectly the purpose of the activity. To establish the specific language skill to be achieved and the time for presentation, practice and production in which it should be presented and applied. Also, if the game is used for introducing a topic, for general practice or to reinforce any language skill.

- **About Students:** teachers should mainly take into account the student's level in language (beginners, intermediate or advanced), age, manners, if they are serious-minded or light-hearted, their situation towards the language, if they take English as a compulsory subject or are highly motivated in learning it, the size of the class and the cultural background.

- **About the Time:** when the game is used is important too. Student's motivation and interest in a game may be very different on a Monday morning from the last hour of class on Friday or, student's response to a game after a test or after a discussion lesson.

- **About the Preparation of the Game:** teachers should check if there is access to get the material and if it's available at school and examine the physical space in which the game will be applied.   Norman (1993)   advices the teacher to be aware of the following points when giving instruction for a game:
  - ❖ Tell the students "**Why**" they are going to play the game and how they will benefit from it. If learners are aware of what they gain from a game they will be more engaged participants.

- ❖ Tell the students "**What**" are going to do while playing the game. This explanation should be done step by step.
- ❖ Tell the students "**How**" to play the game.
- ❖ Handing out photocopied rule sheets to each group is very helpful, as the learners can refer back to them and refresh their memories if necessary during the game.
- ❖ Clarify what the **"Outcome"** will be. Students will pay their attention and therefore they will work more effectively if they know what they can expect at the end of the game.

The researcher confirms that the teacher should be aware that each one of the procedures requires a lot of considerations and arrangements to achieve the purposed objectives .

Grammar
b. Definitions of Gramma

As well as grammatical features, the connections between grammar and meaning and grammar and social context, have been taken into account (Crystal, 2004:65)

- ▪ Yu (2005:10) believes that grammar is not only a set of grammatical forms, but also it includes grammatical meaning and use as a whole. That is, grammar deals with three dimensions; form, meaning and use.
- ▪ Crystal (2004:65) says that grammar is the structural foundation of our ability to express ourselves. The more we are aware of how it works, the more we can monitor the meaning and effectiveness of the way we and others use language.

According to the above mentioned definitions, the researcher defines grammar as a set of rules governs the composition of sentences, phrases and words in English language which are taught to help the students to use English language.

The Importance of Computerized Educational Games in Teaching and Learning Grammar

There are three reasons for implementing computerized games in teaching and learning English grammar; grammar is usually taught by using traditional method and teachers always rely on blackboard and poster as teaching aids; grammar lessons seem complex to students and learning it is the challenge and most of students have negative experiences with grammar and have limited grammar knowledge.

Azar (2007:3) indicates that computer games are particularly useful in grammar learning because they provide a mechanism which give students an incentive to go on practicing a structure beyond the point where they will normally tire of repeating it.

In addition to the previous, the researcher thinks that using the computerized games for the presentation, explanation, and application of grammatical structures could be dedicated to real communication that focuses on expressing meaning.

Part two
Previous Related Studies
Related Studies Concerned with Using Computerized Educational Games in Teaching English Language.

Palmberg (1988) in his study tried to investigate the effect of playing computer games on learning English vocabulary for Swedish–speaking in elementary level and discuss the role of computer games as a technique used to teach English in Finland. The result indicated that computer games constituted a good example of material that satisfies the criterion of language needs relevant to young learning of English language and computer games allowing pupils to be motivated and work at their own pace.

The purpose of **Lim's (2005)** study was to examine the effect of English reading instruction with the application of computer games on achieving and interesting of reading for the 4th grade students compared with the traditional method in China. The sample was two classes with similar proficiency levels were chosen by a diagnostic test. In the experimental group, the students learned the lesson of English reading with computer games, while in control group the students learned through the traditional method which based on the English textbook. The study results were, the experimental group showed higher improvement of achievement in reading than the control group and the experimental group improved more significantly than the control group on interest of English reading.

Yu (2005) explored the effect of computer game-based grammar instruction on students' motivation and classroom atmosphere. In addition, it explored that the use of game in practicing grammatical features may improve the students' rate of accuracy in Japan. The participants were (57) which divided into two groups, the control and experimental groups. The teaching program was the same for both groups. The difference consisted in the use of game-based practice for the experimental group, while the control group performed traditional grammar-based practice only. The findings of this study showed that the

class became entirely student-centered. The use of computer games improved students' rate of accuracy and developed practicing grammatical features.

To examine the effect of using computerized educational games on ESL students' achievement in China, **Li (2007)** selected randomly a sample consisted of (90)students. The sample was divided into two equivalent groups; the experimental group consisted of (45) students were taught by computerized games while the control group consisted of (45) students were taught by the traditional method.The results indicated that the experimental group did better than the control group in the post test. Also, using computerized educational games in learning English as a second language had a great effect on the fourth students' achievement level in English language.

Hamzah & Dourad (2009) carried out their study to examine the effects of using computer games in teaching grammar, particularly in the use of the present simple tense and past simple tense as well as to gain insights on students and teachers responses towards using computer games in teaching and learning grammar items in Malaysia. The sample consisted of (56) students which distributed into two groups; experimental group used games to learn grammar whereas no treatment was given to the control group. The results indicated that grammar games had a positive effect in learning the present and the past simple tenses. The students who learned grammar using computer games were motivated to learn more rules.

Commentary on the Previous Studies
Having reviewed those studies, the researcher's background has been enriched, to some extent, on using computerized educational games in teaching English language.

From the Previous Studies of Using Computer Games in Teaching English, the Researcher Concluded the Following:

- Implementing computerized games in teaching English language showed positive results on the achievement and attitudes towards the teaching- learning process.
- Most of the previous studies indicated that computerized games can create an interesting atmosphere for students which face the difference in their academic and intelligence levels. This means that they face the individual differences among students and help them work at their own speed.
- Some of the previous studies showed that using computerized games makes English teaching and learning process depends on the students which is called students center.

Research Design and Methodology

1. Research Design

The current study used a quasi-experimental approach which required one experimental group. The experimental group was the students in 6th grade. They were taught grammar by using computerized games which were based on fun and motivation as well as creating a positive atmosphere and emotion. By the end of the experiment, the researcher applied a post test in grammar to examine the effectiveness of using computerized games on developing aspects of grammar (the present and past simple tense) for the 6th grade.

2. Sample of the Study

The researcher used an intended sample. The sample of the study consisted of (24) students; (19) males and (5) females as an experimental group chosen from Al Zahra'a Privet School where the researcher works.

3. Instruments of the Study

In order to collect the data that help in achieving the aim of the study, the researcher used the following instruments:

- A Pre - Post Grammar Test.
- Computerized Educational Games.

3. 1 A Pre-Post Grammar Test
3.1.1 The General Aims of the Test

The general aim of the test was to measure the effectiveness of using computerized educational games on developing aspects of English grammar. It was designed according to the criteria of test specification and the criteria of testing students in English language.

3.1.2 Description of the Test Items

Focusing on the achievement test, the total number of the test questions was (6) with (30) items. Each question consisted of (5) items and every item has one mark. Therefore, the total scores given to the test were (30) marks. In addition, the test examined two grammatical lessons which are the present and the past simple tense.

- **Q. (1)** consisted of five choose the correct answer questions; items (1 & 3) examine the present simple and items (2, 4 & 5) examine the past simple.

- **Q. (2)** consisted of five questions. Each one has three sentences and the students tick (√) the correct one. Items (7, 8 & 9) examine the present simple; item (6 & 10) examine the past simple.

- **Q. (3)** consisted of five sentences and the student decides whether the sentence is correct or false. Items (12 &14) examine the present simple; and item (11, 13 & 15) examine the past simple.

- **Q. (4)** consisted of five sentences. Each one has a grammatical mistake which the students should point out and correct it. Items (16 & 18) examine the present simple; and item (17, 19 & 20) examine the past .

- **Q. (5)** consisted of five sentences. Students have to rewrite the sentences using the words in brackets. Items (21, 22 & 24) examine the present simple and items (23 & 25) examine the past simple.

- **Q. (6)** consisted of five questions. Students have to match the questions with the answers. Items (26, 28 & 30) examine the present simple and items (27 & 29) examine the past simple.

3.1.3   Validity of the Test

a. Referee Validity

The researcher refereed the test by a panel of English language teachers at Al-Azhara'a Privet School . According to their recommendations and advice, some modifications and editions were made.

b. Content Validity of the Test

The test was designed according to the general objectives of the content and the objectives of the test. The researcher specified the teaching objectives for the lessons and designed enough items for the pre-post grammar test. Then,   a representative sample of these items were selected.

c. Internal Consistency Validity

The researcher used Pearson Correlation Coefficient to measure the internal consistency validity of the test. The correlation coefficient of each question with the total scores of the test is significant at level (0.001) . The following table (1) shows the correlation coefficient of each question with the total scores of the test.

Table (1)
The Correlation Coefficient of Each Question with the Total Test Scores

Test Questions	Correlation with the Total Scores	Level of Sig.
Question(1)	0.678	0.031
Question (2)	0.863	0.001
Question (3)	0.924	0.001
Question (4)	0.924	0.000
Question (5)	0.863	0.001
Question (6)	0.809	0.005

Table (1) shows that the correlation of each question with the total scores of the test is significant at (0.001). For example, the correlation between question (1) and the total scores was (0.678). This means that the test is highly consistent.

3.1.4 Reliability of the Test
The reliability of the test was measured by Alpha Cronbach Coefficient and the Split-Half techniques.

a. Alpha Cronbach Coefficient
The researcher used Alpha Cronbach Coefficient technique to measure the reliability of the test as in table (2).

Table(2)
Reliability Coefficient by Alpha Cronbach Technique for the Test Questions

Alpha Cronbach	Alpha Cronbach Based on Test Questions	No. of Questions
0.864	0.874	6

From table(2) Alpha Cronbach was (0.86 > 0.05) which means that the test is reliable.

b. Split-Half Technique
To ensure the previous result the researcher tested the reliability by another technique which was Spilt- Half Technique. The test was divided into two parts. Part (1) included the first, the second and the third question and part (2) included the fourth, the fifth and the sixth question.

Table (3)
Reliability Coefficient by Spilt - Half Technique for the Test Questions

Pre-Post Test	No. of Questions	Split-Half
Part (1)	3	0.539
Part (2)	3	0.882

According to the previous tables (Alpha Cronbach Coefficient & Spilt-Half Technique), the test was proved to be reliable.

3.2 The Computerized Educational Games
The researcher designed eleven of computerized games.

3.2.1 Aim of the Computerized Educational Games
The researcher used different eleven computerized games to teach present and past simple tense. Each tense included three grammatical lessons; how to form infinitive, negative and question for the 6th graders. These games were used to teach the experimental group.

3.2.2 Validity of the Computerized Educational Games
To test the games validity, the researcher submitted the first design of the computerized games software to a group of specialists in English language teaching, English language teachers students and experts in instructional techniques to be refereed.

3.2.3 Computerized Educational Games Designing
The computerized games in the current study were designed to teach present and past simple tense. The following is an illustration about using the computerized games as one of the study instruments .

A. The Computerized Games of the Present Simple Tense:
- **My Way (1) Game:** In this game, the students in this study learn the rules and the examples of the present simple tense (affirmative, negative and question forms) through a boy who was walking, running in a way and standing up in front of a wise man who explains the rule or the examples. This game showed only the rules and the examples.

- **Rocket Game:** It is an exercise game aimed to teach the affirmative form of present simple tense which verbs take (s) or (es). It's designed according on " Choose the correct answer". This game consisted of ten items. Each item has three multiples choices after the wrong answer there is an immediate feedback.

- **Frog Game:** aimed to teach the negative form of present simple tense**.** This game named designed according on "Put (√) or (×) for each sentence". A student should put the symbol before passing 30 seconds. After the wrong answer there is an immediate feedback and alternative question. This game consisted of ten items. Five of them are main items and the other five items are alternative items which appeared in the case of the wrong answer.

- **Catching Game:** aimed to make meaningful questions using does/do. Its idea based on catching the parts of the question (Do/Does, subject and the complement) by clicking on each part. The game was based on making a meaningful questions from the parts . The game consisted of ten items. When the student selected the wrong part, the correct one will be lighted.

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- **Similar Pictures Game:** aimed to teach how to make affirmative and negative answers from do/ does questions. The game designed according on choose the correct answer. In the game there were ten items. When the student selected the wrong part, the correct one will be lighted.

B. The Computerized Games of the Past Simple Tense:
- **My Way (2) Game:** aimed to teach past simple tense affirmative, negative and question forms. This game showed the rules and the examples of the present simple tense (affirmative, negative and question forms) through a boy who was walking, running in a way and standing up in front of the wise man who explains the rule or the examples. This game showed only the rules and the examples.

- **Puzzle Game:** aimed to teach students to distinguish between regular and irregular verbs in the past simple tense. There were twelve regular and irregular verbs , the student should find out where the past form was.

- **Solitaire Game:** aimed to teach the negative form of the past simple. It was based on choosing the correct negative form of

the past simple. Ten items were included in the game. When the student selected the wrong part, the correct one will be lighted.

- **Car Game:** aimed to teach how to make meaningful and complete questions using (Did) and how to answer a question with affirmative and negative answer. The game designed according on choose the correct answer. In the game there were ten items. When the student selected the wrong part, the correct one will be lighted.

C. Additional Computerized Games - Revision Games
- **Key Game:** aimed to revise the present simple affirmative, negative and question forms. It was based on correcting the mistake in each sentence. When the student give the correct answer, it will move to find out another key.

- **Lights Game:** aimed to revise the past simple affirmative, negative and questions forms. The game consisted of twenty items . It was designed according on correct the mistake of the each sentence. When the answer is correct, the green light appears, and the red light appears when the answer is wrong. To pass the first level, the student should correct more than four mistakes.

5. Description of the Students
All the students who participated in the current study were in the 6th grade at Al Zahra'a Privet School.

6. Statistical Analysis
The researcher used the following statistical treatment
1. Test was used to determine the level of grammar competence of the experimental group before and after applying the experiment.
2. Pearson Correlation, Alpha Cronbach technique were used to account for the validity of the pre- post test by computing its internal consistency.
3. Spilt-Half Technique was used to confirm the reliability of the test.

4. Modified Gain Ratio Equation was used to count for the effectiveness of using computerized educational games on developing aspects of English grammar for the 6th graders.

7. The Procedures of the Study
The study was processed throughout the following procedures:
1. Reviewing literature and previous studies related to computerized educational games in general and the implementation of computerized games in teaching English grammar in particular.
2. Consulting a number of experienced 6th grade teachers about the learning objectives, the suitable grammar exercises and the initial designing of computerized educational games.
3. Identifying the objectives, preparing the grammatical exercises, and content of the computerized educational games.
4. Presenting the software of computerized games to a group of experts and specialists in teaching English and methodology to avail from their experiences.
5. Preparing a grammar test with the help of a group of teachers.
6. Consulting experts in English language teacher and methodology to assure the reliability and validity of the test.
7. Applying the pre test on the sample of the study.
8. Implementing the experiment, teaching the content using computerized educational games to the experimental group.
9. Applying the post test to examine the effectiveness of using the computerized educational games on developing aspects of English grammar, analyzing and interpreting the results.

8. Limitations of the Study
■   The study aimed to develop aspects of English grammar for 6th graders (male and female) at Al Zahra'a Privet School in Gaza Governorate.
■   The study was implemented in the first semester of the school year (2011-2012).

- The research was limited to teach English language textbook, *English for Palestine* 9, through implementing computerized educational games. The content was the present simple and the past simple tense. The experiment lasted (4) weeks in October and November 2011.

Data Analysis and Results
1. The Answer of the First Question
The first question of the current study is stated as follows:
"What are the suitable computerized educational games for developing aspects of English grammar for the 6th graders?"
The researcher designed the Computerized Games according to the following points:
1. The capabilities and skills of the students.
2. Achieving the objective of the lesson.
3. Can be used at any time.
6. Interactive and non-traditional.
7. Exciting and attractive for continuing to use.
8. Increasing students' motivation by limiting time for each game.
 9. Displaying the result at the end of each game.

2. The Answer of the Second Question
The second question was to test the first hypothesis of the study which inquired the following question:
Are there statistically significant differences at ($\alpha \leq 0.05$) between the 6th graders mean scores of the experimental group in pre and post grammar test due to the use of computerized educational games?
To answer this question, the researcher tested the following null hypothesis:
There are no statistically significant differences at ($\alpha \leq 0.05$) between the 6th graders mean scores of experimental group in grammar pre and post test due to the use of computerized educational games.
To investigate the first hypothesis of the study, mean, standard deviation and T. value for the experimental group in the pre-test and the post-test were computed. The researcher used T-test paired sample to measure the significant differences

between the mean scores of participants in the pre - post test due to the use of computerized educational games and the followed table illustrates this.

Table (5)
Mean, Standard Deviation and T. Value for the
Experimental Group in the Pre-Test and the Post-Test

Experimental Group	No.	Mean	Std. Deviation	T. Value
Pre-test	16	11.94	4.297	- 14.756
Post-test	16	19.44	4.427	

The previous table shows that the mean of the experimental group(19.44) in the post test is higher than the mean of the pre test (11.94). T. value was (- 14.756) which means that there were statistically significant differences at ($\alpha \leq$ 0.05) between the 6th student's mean scores on their post and pre application of the test in favor of the post application.

Table (6)
The Difference between the Mean Scores of the Test
Questions in the Pre-Test and the Post- Test.

Test Questions	Group	No.	Mean	Std. Deviation	T. Value	Sig.
Question(1)	Pre-test	16	2	1.155	-3.873	0.002
	Post-test	16	3.25	1.125		
Question(2)	Pre-test	16	2	1.033	-4.392	0.001
	Post-test	16	3.31	0.946		
Question(3)	Pre-test	16	2.38	1.025	-3.464	0.003
	Post-test	16	3.38	0.957		
Question(4)	Pre-test	16	1.5	1.265	-6.333	0
	Post-test	16	2.69	0.873		
Question(5)	Pre-test	16	2.25	0.683	-3.223	0.006
	Post-test	16	3	0.966		

Question(6)	Pre-test	16	1.81	0.981	-7.746	0
	Post-test	16	3.81	1.276		

Table (6) shows the difference between the Mean, Std. Deviation and T. value of each question in the pre test and the post test. For example, in the **Question(1)**, the mean scores in the post test was (3.25) and it was less than the mean scores in the pre test (2). Sig. was (0.002 < 0.05) which means there was a significant difference between the mean scores in the pre test and the post test.

3.   The Answer of the Third Question
The third question was to test the second hypothesis of the study which inquired the following question:
Are there statistically significant differences at (α ≤ 0.05) between the 6th graders mean scores of experimental group in the pre and post grammar test due to gender factor?

To answer the third question, the researcher tested the following null hypothesis:
There are no statistically significant differences at (α ≤ 0.05) between the 6th graders of experimental group in the pre and post grammar test due to gender factor.

To investigate the second hypothesis of the study, the researcher used T-test for an independent sample to determine the significant differences between the male and the female in the pre and post test.

4. An Independent T. Test to Gender Variable in the Pre - Post test
To implement the independent T. test, the researcher tested the equal of variance between the male and female in the sample using Levene's test according to the hypothesis of "The male variance equals the female variance in the pre test and the post test."

Table (7)
The Equal of Variance between Male and Female in the Test

Group	Sig.	F.
Pre – Test	0.115	2.832
Post – Test	0.111	2.895

Table (7) shows that Sig. was (0.115 > .05) in the pre test and in the post test was (0.111 > .05) which means there was no a significant difference between the variances. So, the assumption of the independent T. test was achieved.

Table (8)
Differences between the Mean Scores of Male and Female in the Pre - Post Test

Group	Mean Difference	Sig.	D.F	T. test	Confidence Interval	
					Upper	Lower
Pre-test	-1.917	0.459	14	- 0.762	3.48	-7.313
Post-test	-0.917	0.73	14	-0.0348	4.733	-6.566

Table (8) shows that there were no significant differences between the mean of the male and female in the pre test and the post test.

Thus, the second hypothesis of the current study is accepted.

5. The Effectiveness of Using the Computerized Educational Games
To account for the effectiveness of the computerized games on developing grammar for the 6th graders, the researcher used Modified Gain Ratio equation as follows:

> **The mean scores of post test – The mean scores of pre test**
> ---
> **Total scores – The mean of pre test**

Table (9)
The Effectiveness of the Computerized Games on
Developing Grammar for the 6th Graders

Experimental Group	Mean of the Post Test	Mean of the Pre Test	Total Scores	Difference between the Two Means	Modified Gain Ratio
	19.44	11.94	30	7.5	41.5

Table (9) shows that the Modified Gain Ratio was (41.5), which nearly lied in the middle between the highest and the lowest modified gain ratio for all the questions (27.3 − 62.7) as in table (15). In other ward, using the computerized educational games had a medium effectiveness on developing the 6th Graders English grammar.

Table (10)
The Effectiveness of the Computerized Games for Each
Question

Test questions	Mean of the Post Test	Mean of the Pre Test	Difference between the Two Means	Modified Gain Ratio
Question(1)	3.25	2	1.25	41.7
Question(2)	3.31	2	1.31	43.7
Question(3)	3.38	2.38	1	38.2
Question(4)	2.69	1.5	1.19	34
Question(5)	3	2.25	0.75	27.3
Question(6)	3.81	1.81	2	62.7

Table (10) shows that the Modified Gain Ratio for all the questions was between (27.3 − 62.7). Therefore, the positive signs of the differences between the means of the pre test and the post test highlighted the effectiveness of computerized games on developing grammar for the students.

Recommendations

Based on the results of the present study, the researcher adopted many recommendations that were directed to the following:

1. To computerize the curriculum like using PowerPoint presentations and computerized games to facilitate English grammar learning for students.
2. To support the schools with new instructional techniques like computers, televisions, videos, internet, copy machines and all kinds of board.
3. To mandate a number of experienced teachers and internal supervisors to support the other teachers and pay their attention to the best methods and techniques.
4. To provide teachers of the students with instructional materials which improve their awareness about using computerized educational games and their importance and necessity of using this strategy in teaching grammar.

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